

REMARKS

The Office Action of April 7, 2008, has been received and reviewed.

Claims 1-12 and 14 are currently pending and under consideration in the above-referenced application, each standing rejected.

Reconsideration of the above-referenced application is respectfully requested.

Rejections under 35 U.S.C. § 103(a)

Each of claims 1-12 and 14 has been rejected under 35 U.S.C. § 103(a).

There are several requirements in establishing a *prima facie* case of obviousness against the claims of a patent application. All of the limitations of the claim must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 985 (CCPA 1974); *see also* MPEP § 2143.03. Even then, a claim “is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art.” *KSR Int’l Co. v. Teleflex Inc.*, 82 USPQ2d 1396 (2007). The Office must also establish that one of ordinary skill in the art would have had a reasonable expectation of success that the purported modification or combination of reference teachings would have been successful. *In re Merck & Co., Inc.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986). There must also be “an apparent reason to combine the known elements in the fashion claimed by the patent at issue.” *KSR* at 1396. That reason must be found in the prior art, common knowledge, or derived from the nature of the problem itself, and not based on the Applicant’s disclosure. *DyStar Textilfarben GmbH & Co. Deutschland KG v. C. H. Patrick Co.*, 464 F.3d 1356, 1367 (Fed. Cir. 2006). A mere conclusory statement that one of ordinary skill in the art would have been motivated to combine or modify reference teachings will not suffice. *KSR* at 1396.

Background Art

Claims 1-12 and 14 stand rejected under 35 U.S.C. § 103(a) for being drawn to subject matter that is allegedly unpatentable over the subject matter discussed in the “BACKGROUND” section of the above-referenced application.

The Office has not established that the background information provided in the above-referenced application is prior art to any of the claims of the above-referenced application.

In order to do so, the Office must demonstrate that such information was known and publicly disclosed by others before the date to which a claim for priority has been made in the above-referenced application (35 U.S.C. § 102(a)), that such information was publicly known more than one year before the date to which a claim for priority has been made in the above-referenced application (35 U.S.C. § 102(b)), that the information was disclosed in a patent application that was published before the date to which a claim for priority has been made in the above-referenced application (35 U.S.C. § 102(e)), or that the requirements of any other subsection of 35 U.S.C. § 102 have been met.

Notably, the “BACKGROUND” section of the above-referenced application does not include any admission that the background information provided therein was the work of another, as M.P.E.P. § 2129 clearly requires before the Office may consider a statement from the “BACKGROUND” section of an application to be prior art. Furthermore, there has not even been any admission that the information provided by the “BACKGROUND” section is “prior art.” As such, the Office must meet its burden by providing some external evidence that the background information upon which it has based its rejections actually qualifies as prior art under some subsection of 35 U.S.C. § 102.

The mere discussion of semiconductor device structures with silicon nitride layers including “non-uniformities or particles of about 120-150 nm dimension... at an incidence of about 40,000 or more per eight inch semiconductor wafer...” in the “BACKGROUND” section does not qualify that background information as the type of prior art that renders any of claims 1-12 and 14 unpatentable under any subsection of 35 U.S.C. § 102 or, therefore, under 35 U.S.C. § 103(a).

As the Office has not established that the information provided in the “BACKGROUND” section of the above-referenced application is prior art under any subsection of 35 U.S.C. § 102, it is respectfully submitted that a *prima facie* case of obviousness against the subject matter recited in independent claim 1 or independent claim 8 cannot be based upon the information provided in the “BACKGROUND” section.

Claims 2-7 are each allowable, among other reasons, for depending directly or indirectly from independent claim 1, which is allowable.

Claim 5 is additionally allowable because the “BACKGROUND” section does not teach or suggest that the surface of a layer that comprises anti-reflective material may be substantially free of at least one of measurable particulates or surface roughness. To the contrary, Fig. 4 of the above-referenced application shows a large number of in-film particles 44 on the surface of a dielectric anti-reflective coating (“DARC”) film 42. Further, paragraph [0009] of the above referenced application explains that the presence of about 40,000 or more non-uniformities or particles in a silicon nitride layer will probably be problematic due to the increased likelihood that they will cause structural deformities or other problems.

Each of claims 9-12 and 14 is allowable, among other reasons, for depending directly or indirectly from claim 8, which is allowable.

Claim 12 is further allowable since the “BACKGROUND” section of the above-referenced application does not include any teaching or suggestion that the surface of a layer that comprises anti-reflective material may be substantially free of at least one of measurable particulates or surface roughness. To the contrary, Fig. 4 of the above-referenced application shows a large number of in-film particles 44 on the surface of a dielectric anti-reflective coating (“DARC”) film 42. Further, paragraph [0009] of the above referenced application explains that the presence of about 40,000 or more non-uniformities or particles in a silicon nitride layer will probably be problematic due to the increased likelihood that they will cause structural deformities or other problems.

Background Art in View of Ogawa

Claims 1-12 and 14 are also rejected under 35 U.S.C. § 103(a) for reciting subject matter that is allegedly unpatentable over the art discussed in the “BACKGROUND” section of the above-referenced application, in view of Ogawa, “Performance of a Vertical LPCVD Apparatus,” J. Electrochem. Soc., 136(4) 1103-08 (1989) (hereinafter “Ogawa”).

Independent claim 1 is drawn to a semiconductor device structure with a layer comprising silicon nitride that is substantially free of in-film particles and surface roughness features of about 120 nm to about 150 nm, which are much smaller than the “larger than” 200 nm dust particles

discussed in Ogawa. Independent claim 8 recites a layer that comprises silicon nitride that is substantially free of in-film particles or surface roughness features of at least about 120 nm.

Ogawa teaches processes by which dust particle contamination may be reduced, the disclosure of Ogawa is limited to quantification of dust particles having diameters of “larger than 0.2 μ m,” or larger than 200 nm. Ogawa, Abstract. Ogawa’s teaching that the number of dust particles having diameters of more than 0.2 μ m, or 200 nm, does not, however, equate to a reduction in the number of smaller features, such as those recited in independent claim 1 and independent claim 8, in a layer that comprises silicon nitride. More specifically, Ogawa does teach or suggest that the disclosed process would result in a semiconductor device structure with a layer that comprises silicon nitride and that is substantially free of in-film particles or surface roughness features with dimensions of about 120 nm to about 150 nm (independent claim 1) or of down to about 120 nm (independent claim 8).

Therefore, the teachings of Ogawa do not remedy the above-identified deficiency with respect to the qualification of the background information discussed in the “BACKGROUND” section of the above-referenced application as prior art under any subsection of 35 U.S.C. § 102. Thus, the subject matter discussed in the “BACKGROUND” section of the above-referenced application and the teachings of Ogawa do not support a *prima facie* case of obviousness against either amended independent claim 1 or amended independent claim 8.

Accordingly, under 35 U.S.C. § 103(a), amended independent claims 1 and 8 are both drawn to subject matter that is allowable over the art discussed in the “BACKGROUND” section of the above-referenced application (assuming, only for the sake of argument, that such art could be considered to be prior art) and the teachings of Ogawa.

Claims 2-7 are each allowable, among other reasons, for depending directly or indirectly from independent claim 1, which is allowable.

Claim 5 is additionally allowable because neither the “BACKGROUND” section nor Ogawa teaches or suggests that the surface of a layer that comprises anti-reflective material may be substantially free of at least one of measurable particulates or surface roughness. To the contrary, Fig. 4 of the above-referenced application shows a large number of in-film particles 44 on the surface of a dielectric anti-reflective coating (“DARC”) film 42. Further, paragraph [0009] of the

above referenced application explains that the presence of about 40,000 or more non-uniformities or particles in a silicon nitride layer will probably be problematic due to the increased likelihood that they will cause structural deformities or other problems.

Each of claims 9-12 and 14 is allowable, among other reasons, for depending directly or indirectly from claim 8, which is allowable.

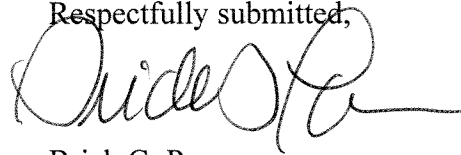
Claim 12 is further allowable since the “BACKGROUND” section of the above-referenced application and Ogawa both lack any teaching or suggestion that the surface of a layer that comprises anti-reflective material may be substantially free of at least one of measurable particulates or surface roughness. To the contrary, Fig. 4 of the above-referenced application shows a large number of in-film particles 44 on the surface of a dielectric anti-reflective coating (“DARC”) film 42. Further, paragraph [0009] of the above referenced application explains that the presence of about 40,000 or more non-uniformities or particles in a silicon nitride layer will probably be problematic due to the increased likelihood that they will cause structural deformities or other problems.

Withdrawal of the 35 U.S.C. § 103(a) rejections of claims 1-12 and 14 is respectfully requested, as is the allowance of each of these claims.

CONCLUSION

It is respectfully submitted that each of claims 1-12 and 14 is allowable. An early notice of the allowability of each of these claims is respectfully solicited, as is an indication that the above-referenced application has been passed for issuance. If any issues preventing allowance of the above-referenced application remain which might be resolved by way of a telephone conference, the Office is kindly invited to contact the undersigned attorney.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Brick G. Power", written over the typed name.

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